

October 31, 1979

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
METROPOLITAN EDISON COMPANY)	Docket No. 50-289
)	(Restart)
(Three Mile Island Nuclear)	
Station, Unit No. 1))	

LICENSEE'S RESPONSE TO FINAL
CONTENTIONS OF STEVEN C. SHOLLY

Contention No. 1. It is contended that the Unit 1 containment isolation system does not meet the following requirements:

- a. Conformance with the Standard Review Plan Section 6.2.4, "Containment Isolation System";
- b. Compliance with GDC 16, Containment Design;
- c. Compliance with GDC 50, Containment Design Basis;
- d. Compliance with GDC 54, Piping Systems Penetrating Containment.

It is further contended that as a result of the design and construction of the Unit 1 containment and the containment isolation system, Unit 1 is rendered incapable of compliance with 10 CFR 20.105, 10 CFR 20.106, and Appendix I of 10 CFR 50, and that, therefore, there exists reasonable doubt that Unit 1 can be operated without endangering the health and safety of the public. Inasmuch as the Commission has the authority pursuant to 10 CFR 50.109 to require backfitting when such backfitting is required to provide substantial, additional protection of public health and safety, it is contended that compliance with SRP Section 6.2.4, GDC 16, GDC 50, GDC 54, 10 CFR 20.105, 10 CFR 20.106, and Appendix I of 10 CFR 50 is required to protect the public health and safety, and that therefore backfitting of the Unit 1 containment and containment isolation system is a necessary precondition to permission to restart.

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Licensee's Response

Insofar as this contention challenges the adequacy of the TMI-1 containment isolation system, it is a proper subject for this proceeding, since this issue is treated in the I & E Bulletins referenced in the Commission's statement of the basis for suspension contained in the August 9 Order and is specified as an issue in this proceeding as one of the Category A recommendations of Table B-1 of NUREG-0578 (Section 2.1.4). However, there is no indication from the Commission's August 9 Order that the bases for suspension include other aspects of containment design or compliance questions under 10 CFR Sections 20.105 and 20.106, and Appendix I of Part 50. Accordingly, licensee objects to paragraph two of this contention insofar as it raises issues unrelated to containment isolation system design.

Contention No. 2. It is contended that the reactor coolant pressure boundary for Unit 1, as designed and constructed, does not meet the requirements of GDC 14, GDC 15, and GDC 30. It is further contended that because of noncompliance with GDC 14, GDC 15, and GDC 30, the operation of Unit 1 poses an undue risk to the health and safety of the public. Inasmuch as the Commission is empowered pursuant to 10 CFR 50.109 to require backfitting of Unit 1 to provide compliance with GDC 14, GDC 15, and GDC 30, and because compliance with the General Design Criteria is required to provide assurance that Unit 1 can operate without endangering the public health and safety, it is contended that the reactor coolant pressure boundary of Unit 1 must be backfitted to provide compliance with GDC 14, GDC 15, and GDC 30 prior to restart.

Licensee's Response

Although not entirely clear from the face of Contention

2, it appears from Petitioner's explanation of the basis for this contention that it relates to the adequacy of PWR Relief and Safety Valves, as addressed in NUREG-0578. (Sections 2.1.2 and 2.1.3.a). Assuming that this contention is limited to considering this specific aspect of the reactor coolant pressure boundary, we interpose no objection to its admission, since consideration of NUREG-0578 Category A recommendations -- which include this issue -- are properly within the scope of this proceeding.

Contention No. 3. It is contended that as a result of Licensee's Operating Procedures, the emergency core cooling system can be defeated by operator actions during the course of a transient and/or accident at Unit 1, such defeat consisting of either throttling back the high-pressure injection pumps or tripping these pumps. It is further contended that under the conditions of a loss-of-feedwater transient/loss of coolant accident at Unit 1, defeat of the emergency core cooling system high-pressure injection system by pump throttling and/or pump trip results in significant cladding metal-water reaction, causing the production of amounts of hydrogen gas in excess of the amounts required by NRC regulations to be considered in the design and accident analysis of nuclear power plants. It is contended further that such production of hydrogen gas results in the high risk of breach of containment integrity due to the explosive combustion of the hydrogen gas in the containment. Inasmuch as the emergency core cooling system is an engineered safety feature which is relied upon to protect the public health and safety, and because proper operation of the emergency core cooling system is required to provide reasonable assurance that Unit 1 can be operated without endangering the public health and safety, it is contended that the emergency core cooling system operating procedures must be modified in order to ensure compliance with the GDC 35 requirement of negligible clad metal-water reaction following a loss-of-coolant accident (LOCA). It is further contended that the emergency core cooling system operating procedures must be appropriately modified prior to restart in order to provide for protection of the public health and safety.

Licensee's Response

Licensee views the last two sentences of this contention as the operative portion of the contention. They address the need for modification of ECCS operating procedures. Premature shutdown of the TMI-2 ECCS was recognized as a problem in the I & E Bulletins referenced in the Commission's August 9 Order, and several of the Staff recommendations specified as issues in this proceeding relate to this problem. Accordingly, Licensee does not object to this contention.

Contention No. 4. It is contended that the ability of the Licensee to provide radiation exposure and dose data to responsible officials having decision-making responsibilities with respect to off-site radiation releases and emergency response to such releases is significantly impaired due to the lack on the part of the Licensee of on-site environmental TLD processing facilities. It is further contended that the Licensee is not prepared to implement Health Physics Procedure 1670.6, "Offsite Radiological Monitoring," due to the lack of on-site TLD processing capabilities. It is contended further that this lack of preparedness to implement Health Physics Procedure 1670.6 does not adequately protect the public health and safety under conditions of off-site release of radioactive materials, because this limits the Licensee's environmental TLD data to five off-site stations beyond five miles from the site, conditions which can permit plumes to fall in between TLD sites, thus severely limiting the ability of the Licensee to provide accurate and timely radiation exposure and dose estimates to responsible public officials. It is further contended that protection of public health and safety under accidental release of radioactivity conditions requires that the Licensee have on-site TLD processing capability prior to restart.

Licensee's Response

Because of its relationship to item 3(c) of the Commission's August 9 Order (p. 6), this contention deals with

one of the specified issues in this proceeding, and Licensee therefore does not object to its admission.

Contention No. 5. It is contended that the Licensee has not provided sufficient radiation monitoring capacity in the containment, spaces which could contain LOCA fluids, effluent discharge paths, and the plant environs, as required by GDC 64. It is further contended that existing radiation monitoring in said locations does not provide for sufficient monitoring for radioactivity which may be released due to anticipated operational occurrences and due to postulated accidents, capacity for which is required in GDC 64. It is contended that lack of compliance with GDC 64 will prevent the Licensee from making accurate estimates of radioactivity releases from Unit 1 under conditions of anticipated operational occurrences and postulated accidents, and that this lack of compliance places the public health and safety at significant risk because such information is required by public officials to provide bases for decision-making related to emergency actions which may be required to protect the public health and safety. It is further contended that until the Licensee provides sufficient numbers and distribution of radiation release monitors which are capable of yielding on-scale results for all conditions of radiation release resulting from anticipated operational occurrences and postulated accidents, permission for the Licensee to restart Unit 1 should be denied.

Licensee's Response

Inasmuch as this contention is closely related to two of the recommendations listed in Table B-1 of NUREG-0578 (Sections 2.1.8.b and 2.1.8.c), it is included within the issues to be considered at the hearing. Accordingly, Licensee does not object to the admission of Contention 5.

Contention No. 6. It is contended that Unit 1's design contains the following features which make the plant unusually sensitive to off-normal transient conditions originating in the secondary system:

- a. Design of the steam generators to operate with a relatively small liquid volume in the secondary side;
- b. Lack of direct initiation of reactor trip upon the occurrence of off-normal conditions in the feedwater system;
- c. Reliance on an integrated control system to automatically regulate feedwater flow;
- d. Actuation before reactor trip of a pilot-operated relief valve on the primary system pressurizer;
- e. Low steam generator elevation relative to the reactor vessel which provides a smaller driving head for natural circulation.

It is further contended that these features result in the placing of a greater burden on successful ECCS function and proper operator decisions and actions than was anticipated in design to deal with off-normal system behavior during anticipated transient conditions. It is contended that the total effect of these factors results in the lack of reasonable assurance that Unit 1 can be operated without endangering the public health and safety, and that until the design and operating procedures at Unit 1 are modified to provide such reasonable assurance, permission for restart must be denied. It is further contended that the short-term actions identified in the Commission's Order and Notice of Hearing dated 9 August 1979 are insufficient to provide the requisite reasonable assurance of operation without endangering the public health and safety.

Licensee's Response

The last sentence of this contention is, by itself, vague; however, Licensee assumes from Petitioner's stated basis for this contention that Petitioner is asserting that the short-term actions are "insufficient" in that they fail to provide for a failure mode and effects analysis of the Integrated Control System (a "long-term" NRR recommendation), and also

fail to include certain other Category B requirements of NUREG-0578 (as listed near the end of Petitioner's basis for this contention). Although we believe the last sentence of the contention should be revised to reflect this, in all other respects we do not object to the admission of Contention 6.

Contention No. 7. It is contended that the Licensee's analysis of loss-of-coolant (LOCA) accidents is incomplete, that the Licensee is therefore not in compliance with the requirement of 10 CFR 50, Appendix K, requiring analysis of a spectrum of postulated LOCA's, and that to the extent such analyses are incomplete, operational procedures used by the Licensee to define operator action with respect to LOCA's are defective. It is further contended that without complete analysis of LOCA's there is a lack of reasonable assurance that Unit 1 can be operated without endangering the public health and safety. It is therefore contended that until LOCA analyses are complete and operational procedures relative to operator actions in dealing with LOCA's are revised and accurate, permission for restart must be denied to protect the public health and safety.

Licensee's Response

As noted by Petitioner, this contention closely follows one of the NRR short-term action items listed by the Commission in its August 9 Order. Accordingly, Licensee does not object to this contention.

- * Contention No. 8. It is contended that the Licensee's emergency plan for Unit 1 is defective because it does not provide sufficiently for the protection of public health and safety under all conditions of operation, including anticipated operational occurrences and postulated accidents. It is further contended that the proposal by the Commission to extend the Licensee's emergency action capabilities out to a

distance of ten miles from the site does not adequately address the protection of public health and safety under accident conditions, especially when highly variable factors such as changing weather conditions, strikes affecting transportation facilities, the presence of significant numbers of extra persons in the area during certain times of year, and the nature of the geography and transportation routes in the surrounding area are considered. It is contended that the Licensee's emergency plan does not contain sufficient detail to permit the finding of reasonable assurance that appropriate measures can and will be taken in the event of an emergency to protect the public health and safety and prevent damage to property, as required by Appendix E of 10 CFR Part 50. It is further contended that the Licensee's emergency plan does not provide for means for determining the magnitude of the release of radioactive materials, including sufficient criteria for determining the need for notification of local, state and federal agencies, and criteria for determining when protective measures should be considered within and outside the site boundary to protect public health and safety and prevent damage to property, which are also required under Appendix E of 10 CFR 50. It is also contended that the emergency procedures of the Licensee do not assure prompt notification of the public and local officials of the need for public evacuation or other protective measures which may be necessary in the event of an emergency at Unit 1, assurance of which is required under Appendix E of 10 CFR 50. It is contended that until the Licensee's emergency plans are suitably revised and sufficiently detailed to assure that appropriate measures can and will be taken in the event of an emergency to protect the public health and safety and prevent damage to property, permission for restart must be denied.

Licensee's Response

Licensee recognizes the right of Mr. Sholly to raise contentions relating to emergency planning. In accordance with the position set forth at Section B of Licensee's covering memorandum, it is requested that the Board require Mr. Sholly to revise and resubmit this contention with specific objections to Licensee's emergency preparedness following his receipt of the updated Emergency Plan.

- * Contention No. 9. It is contended that the Licensee's environmental radiation monitoring program contains an insufficient number of monitoring sites and an inadequate distribution of monitoring sites within twenty miles of the Unit 1 site to provide sufficient protection of the public health and safety. It is further contended that there is in the Licensee's environmental radiation monitoring program an unwarranted reliance on the use of thermoluminescent dosimeters (TLD's) for providing information used to calculate radiation exposure data, and that this unwarranted reliance on TLD's seriously underestimates radiation doses to the public. It is also contended that the Licensee does not possess adequate portable radiation monitors to provide additional information in the event of an offsite radiation release, and that the Licensee does not exercise adequate administrative control over the maintenance of these units, nor the training of personnel in their use. It is contended that the radiation monitoring program of the Licensee must be greatly upgraded prior to restart to ensure adequate protection of the public health and safety.

Licensee's Response

Licensee recognizes the right of Mr. Sholly to raise contentions relating to Licensee's monitoring program. In accordance with the position set forth at Section B of Licensee's covering memorandum, it is requested that the Board require Mr. Sholly to revise and resubmit this contention with specific objections to Licensee's program following his receipt of Licensee's description of its upgraded monitoring program.

Contention No. 10. It is contended that until a method for decontaminating and restoring Unit 2 has received NRC approval and the environmental impact of that method and the impact of that method on the waste handling and storage capacity of Unit 1 have been evaluated, to proceed with restart would place an unnecessary and unreasonable risk on the public health and safety. It is further contended that until the Licensee can provide reasonable assurance that it can safely operate Unit 1 while decontaminating and restoring Unit 2, restart must be postponed.

Licensee's Response

This contention is directly related to items 4 and 5 of the Commission's August 9 Order (p. 6). Licensee does not object to its admission.

Contention No. 11. It is contended that the production of hydrogen in the reactor core from clad metal-water reactions following a LOCA poses an unacceptably high risk of catastrophic failure of the reactor pressure vessel and the reactor containment, with the subsequent release of a substantial portion of the core inventory into the environment. It is further contended that until a safe and reliable means for eliminating hydrogen gas from the containment is installed at Unit 1, and is provided with suitable redundancy as required by GDC 41, restart of Unit 1 poses a risk to public health and safety and must be denied.

Licensee's Response

This contention challenges the adequacy of 10 CFR Section 50.44, which provides that a recombiner system is not required for plants, such as TMI-1, constructed in the time frame and in the manner described in Section 50.44(g). This subject is treated in NUREG-0578, which recommends "rulemaking to require capability of installing recombiners." Id at p. B-3 (emphasis added). (See NUREG-0578, Section 2.1.5.c). Accordingly, this contention is not an appropriate contention for this adjudicatory proceeding, and should be rejected.

Contention No. 12. It is contended that regardless of the substance of the Final Order in this proceeding, the decision of the Board and the Commission will, in view of the extraordinary circumstances of this proceeding, constitute a major Federal action which could significantly affect the quality of the human environment, and that as such, the decision of

the Board and the Commission in this case falls under the requirements of Section 102 of NEPA. It is further contended that the environmental impact statement required under Section 102 of NEPA must be issued before the NRC's decision can take effect in this case. It is further contended that as a result of the similarities in design and construction of Units 1 and 2, the results of the 3/28/79 accident at Unit 2 have rendered invalid major sections of the Final Environmental Impact Statement on Three Mile Island Unit 1 (NUREG-0552), and that such sections as have been rendered invalid must be addressed in the new environmental impact statement which is required to be prepared. It is also contended that the psychological impact of Unit 1 restart must be evaluated in the NEPA statement required under Section 102 for this proceeding.

Licensee's Response

For the reasons stated in Licensee's accompanying memorandum on this subject, Licensee objects to admission of this contention on the grounds that (1) the psychological impact of restarting Unit 1 is not a cognizable issue under NEPA and (2) the restart of Unit 1 does not otherwise require a new EIS or EIS supplement. Mr. Sholly asserts that the TMI-2 accident has rendered invalid major portions of the FES for Units 1 and 2, and in the basis for his contention lists four sections of the FES he claims to be invalidated. As to the first two sections identified by Mr. Sholly, dealing with radioactive wastes and impact of routine operations, Licensee cannot discern how the accident at TMI-2 could possibly invalidate the FES as applied to TMI-1. As to the third section, Mr. Sholly apparently contends that the impact of Class 9 accidents should now be evaluated. Licensee's response to this contention is covered in its response to

UCS Contention No. 20. As to the fourth section, it is extraordinarily improbable that the cost of modifying TMI-1 for restart would tip the cost/benefit balance against TMI-1 compared to the loss of plant investment and the cost of replacement power; in any event, Mr. Sholly has provided no basis for such a contention.

Contention No. 13. It is contended that the Unit 1 computer system does not meet the requirements for instrumentation and control specified in GDC 13, and is inadequate to insure proper operation of the Unit 1 reactor under all conditions of normal operation, including anticipated operational occurrences and postulated accident conditions. It is further contended that the lack real-time printout capability during accident conditions and the lack of sufficient redundancy in the computer system place the public health and safety at significant risk during accident conditions, especially if computer function is lost and no backup unit is available. It is contended that until the Unit 1 computer system is upgraded to meet the standards of GDC 13 and until suitable redundancy is provided within the computer system to assure real-time printout capability at all times, permission for restart must be denied on the basis of risk to public health and safety due to inadequate availability of operational information to Unit 1 operators.

Licensee's Response

Although Licensee does plan to upgrade the TMI-1 computer system and to cover this subject in its Restart Report to the NRC, the TMI-1 computer system was not included in the Commission's bases for suspension of operation of TMI-1 and is not involved in any of the issues specified for the hearing. Licensee therefore objects to the contention.

Contention No. 14. It is contended that the Licensee has negligently violated NRC regulations and technical specifications and that such violations place the safety of the

public and the protection of the public health in question. It is contended further that the performance of the Licensee during the Unit 2 accident in terms of violations of regulations and technical specifications, and in terms of timely execution of safety-related functions, is directly applicable to Unit 1 since such violations call into question the management and administrative capabilities of the Licensee. It is further contended that until the Licensee can conclusively demonstrate that it possesses the necessary managerial and administrative capabilities required to operate Unit 1 in compliance with all applicable rules and regulations while, at the same time, properly and safely decontaminate and restore Unit 2, permission for restart of Unit 1 must be denied.

Licensee's Response

Licensee understands that this contention seeks to address purported violations of NRC regulations and technical specifications which are directly related to the TMI-2 accident. So limited, Licensee does not object to the admission of this contention, since it relates to one of the bases for suspension (the question of Licensee's management capability) and since it addresses the subject matter of item 6 at p. 7 of the Commission's August 9 Order.

Contention No. 15. It is contended that the design of the Unit 1 Control Room, instrumentation, and controls is such that operators cannot maintain system variables and systems within prescribed operating ranges during feedwater transients and LOCA's. It is further contended that this violates the provisions of GDC 13 regarding instrumentation and controls. It is contended that in view of the numerous operating difficulties encountered with Unit 2, and the similarities in design and construction between Units 1 and 2, a thorough human factors engineering review of Unit 1's Control Room is called for in order to provide assurance that the operator-instrumentation interface is such that the operators can exercise adequate control over the reactor and prevent off-site consequences from anticipated operational occurrences and postulated accidents. It is further contended

that in order to assure maximum protection for the public health and safety, the human factors engineering review and any necessary changes recommended as a result of this review must be completed prior to restart.

Licensee's Response

This contention has a sufficient relation to NUREG-0578 sections which address control room instrumentation and control that Licensee does not object to the contention.

Dated: October 31, 1979

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